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**INTERNATIONAL ECONOMIC RELATIONS
AND SUSTAINABLE DEVELOPMENT**

**МІЖНАРОДНІ ЕКОНОМІЧНІ ВІДНОСИНИ
ТА СТАЛИЙ РОЗВИТОК**

**MIEDZYNARODOWE STOSUNKI GOSPODARCZE
I ZRÓWNOWAŻONY ROZWÓJ**

**МЕЖДУНАРОДНЫЕ ЭКОНОМИЧЕСКИЕ ОТНОШЕНИЯ
И УСТОЙЧИВОЕ РАЗВИТИЕ**

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Chain technology – is the Data storage, computation and transfer with unified Application Programming Interface.

Universal API will use for accessing user interface or application. Ability to use the services of Facebook, and also connect several ways to display.

The main Network principles should be:

global directory of goods and services; verified users; effective promotion; independent rating system for creation reliable and fair social environment; obligatory the openness of the system for editing, resources, information and technologies exchange with the world.

Network may be useful for:

Achieving the goals and improving the quality of life;

Creation and management of the enterprise or organization;

State aids for the corruption extermination.

Thus, the main purpose of decentralized socio-economic system is to create free economic space based on the peer-to-peer (p2p) technology, to provide freedom to the exchange resources, goods, information and services, based on control by participants in the network and use intra-system monetary unit, which can be converted into fiduciary currency.

METHODICAL FOUNDATIONS OF ANALYSIS OF ENVIRONMENTAL SAFETY WITH THE USE OF THE FUZZY LOGIC THEORY

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Recently, ecological pollution and the related global warming have become one of the most important problems, which solving all the World countries' social development is dependent on. Global climate changes which happen today may be one of the most important sources of the direct and indirect ecological risks for Ukraine's Sustainable Development [1]. The problem of achieving the Environmental Safety conditions requires appropriate coordinated actions of many subjects' of the economic-productive activity. In the system crisis it is quite important to develop integrated methodological approach accounting the properties of uncertainty in problems of Environmental Safety. Thus, the given above led us to a necessity of considering the methodological basis of the fuzzy logic theory (methods of fuzzy sets) for Ukrainian's Environmental Safety level assessment. The advantages of such approach are derived from taking into account the multi-criteria and uncertainty facets of the phenomenon; also, having in mind that the safety remains a non-straight-cut concept, being

vaguely defined it implies a non-deterministic character by using the fuzzy set logic [2]. To process this kind of expressions a special system, which is based on the methods of the fuzzy sets theory and fuzzy expressions, is developed. This is achieved by introducing a membership function (MF) of fuzzy parameters, which takes values from 0 to 1. Its approximation to 1 means more confidence in expressions and more significant level of its implementation. It is appropriate to use exponential functions, as follows [2]:

$$f(x) = \exp[b(x-c)^2],$$

where b and c – parameters of the function that determine its form.

The fuzzy solution of the problem of achieving the fuzzy goal is called the intersection of the fuzzy sets of goals and limitations, i.e. MF for the solutions is:

$$\lambda_i = \max_k \left\{ \min_j \left\{ \sup_{x \in X_j} (\min \{ \mu_j(x), \nu_{ijk}(x) \}) \right\} \right\},$$

where λ_i – the grade of the considered situation membership to class i ; X_j – range of parameter j ; $\mu_j(x)$ – MF of the considered situation evaluation by the parameter j ; $\nu_{ijk}(x)$ – MF of the k expression in the knowledge base by the parameter j to class i .

There are many types of curves to determine the MF. The most common MF is triangular, trapezoid and Gaussian function. Generalized MF of the Gaussian's type is described by the formula:

$$\mu(x) = e^{-\frac{(x-c)^2}{\sigma^2}},$$

and is determined by three parameters (a, σ, b) . The value $b = 1$ corresponds to the standard Gaussian function. This function is preferable due to its three following properties: 1) its similarity to the accumulation; 2) limitation of values that are necessary to comply with the MF properties; 3) infinite definition domain, which greatly simplifies the algorithmic solutions while programming operations on fuzzy subsets.

In other words, to determine the grade of the situation membership to any class, it is necessary [3]:

- to determine the exact upper borders of intersection of the MF for the situation evaluation and expressions on the parameters with the sections of expressions of the class;
- to determine the minimum values of exact upper borders by the sections of expressions of the class;

– to determine the maximum grade of the situation membership by the sections of expressions of the three classes, which are described as follows: 1) normal status (- "if all the indicators are better than the threshold values of entering the pre-crisis status, the status is normal"; 2) pre-crisis status - "if at least one of the parameters is worse than the threshold parameter of pre-crisis status, and all other parameters are better than the crisis threshold, the status is considered to be pre-crisis"; 3) crisis status - "if at least one parameter is worse than the crisis status threshold, the status is crisis."

Thus, Fuzzy set theory is a useful tool for dealing with knowledge about Environmental Safety territory, taking into account uncertainty the interpretation of qualitative evaluation's results (that is, the analysis of statistical measures).

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2. Zadeh L. A. Fuzzy Sets. / Lotfi Aliasker Zadeh // Information and Control, June 1965. – Vol. 8(3). – P. 338-353.

3. Karaieva N. V., Bereznytska M. V. Methodology of analysis sustainable development of Ukraine by using the theory fuzzy logic [Online] // International Scientific E-Journal "Economic Processes Management", 2016 – №1 – [Electronic resource]. - Access mode http://epm.femsumdu.edu.ua/download/2016_1/2016_1_7.pdf.

ЭКОЛОГО-ЭКОНОМИЧЕСКИЕ МЕХАНИЗМЫ УСТОЙЧИВОГО РАЗВИТИЯ

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Человечество в течение тысячелетий пытается создать среду обитания, в котором оно могло бы полностью реализовать себя. Для достижения этой мечты общество постоянно ставит перед собой определенные цели и пытается осуществлять их любой ценой. Однако, анализируя современную международную ситуацию, можно сказать, что человечество развивается не по правильному пути.

Цивилизации в течение тысяч лет переживали множество величественных расцветов и сокрушительных падений. И на руинах, оставшихся после этих кризисов, никогда не возникали новые цивилизации с величием прежних, яркими примерами этого являются Вавилон, Ассирия, Карфаген. Ф. Энгельс писал, что цивилизации оставляют после себя пустыни.